



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,772 .	11/20/2003	Kazutaka Uchitomi	5271-0109PUS1	8376
2292	7590	09/22/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			RHEE, JANE J	
PO BOX 747			ART UNIT	PAPER NUMBER
FALLS CHURCH, VA 22040-0747			1745	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,772

Applicant(s)

UCHITOMI ET AL.

Examiner

Jane Rhee

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Rejections Repeated

1. The 35 U.S.C. 102(b) of claims 1-4,16-18 anticipated by Miyasaka has been repeated for the reasons previously made in office action 3/24/2006.

As to claim 4, wherein Mn has an average valence of 3.3 to 4, since Miyasaka teaches the lithium containing complex oxide desired by the applicant, it is inherent that Miyasaka discloses wherein Mn has an average valence of 3.3 to 4.

2. The 35 U.S.C. 103(a) of claims 14-15,29-30 over Miyasaka has been repeated for the reasons previously made in office action 3/24/2006.

3. The 35 U.S.C.103(a) of claims 5-13,20-28 over Miyasaka in view of Pynenburg et al. and in further view of Gorge et al. for the reasons previously made in office action 3/24/2006.

As to claim 5, wherein Mn has an average valence of 3.3 to 4, since Miyasaka teaches the lithium containing complex oxide desired by the applicant, it is inherent that Miyasaka discloses wherein Mn has an average valence of 3.3 to 4.

New Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1745

4. Claims 31,34,37,40,43 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyasaka (6416902).

As to claims 31, 37,40 Miyasaka discloses a non-aqueous secondary battery comprising a positive electrode comprising a lithium-containing complex oxide as an active material, a negative electrode and a non-aqueous electrolyte (col. 2 lines 14-19) wherein the lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; and M is at least one element selected from the group consisting of Mg, Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, Zr and Sn (col. 2 lines 41-60), the lithium-containing complex oxide comprising secondary particles formed of flocculated primary particles, wherein the primary particles have a mean particle diameter of 0.3 to 3 μm (col. 12 line 31) and the secondary particles have a mean particle diameter of 5 to 20 μm (col. 12 line 32).

Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 5:5:2 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; Ni 0.5Mn0.49Co0.2).

As to claim 34, Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 1:1:1 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; Ni 0.5Mn0.49Co0.5).

As to claim 43, Miyasaka discloses wherein the positive electrode mixture has a density of at least 2.9g/cm³ (col. 5 lines 60-61).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 32,35,38,41,44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasaka in view of Pynenburg et al. and in further view of Gorge et al.

As to claims 32, 38,41 Miyasaka discloses a non-aqueous secondary battery comprising a positive electrode comprising a lithium-containing complex oxide as an active material, a negative electrode and a non-aqueous electrolyte (col. 2 lines 14-19) wherein the lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y-\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; and M is at least one element selected from the group consisting of Mg, Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, Zr and Sn (col. 2 lines 41-60), the lithium-containing complex oxide comprising secondary particles formed of flocculated primary particles, wherein the primary particles have a mean particle diameter of 0.3 to 3 μm (col. 12 line 31) and the secondary particles have a mean particle diameter of 5 to 20 μm (col. 12 line 32).

Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 5:5:2 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y-\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$;

Art Unit: 1745

Ni_{0.5}Mn_{0.49}Co_{0.2}).

As to claim 35, Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 1:1:1 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; Ni_{0.5}Mn_{0.49}Co_{0.5}).

As to claim 44, Miyasaka discloses wherein the positive electrode mixture has a density of at least 2.9g/cm³ (col. 5 lines 60-61).

6. Claims 33,36,39,42,45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasaka.

As to claims 33, 39,42 Miyasaka discloses a non-aqueous secondary battery comprising a positive electrode comprising a lithium-containing complex oxide as an active material, a negative electrode and a non-aqueous electrolyte (col. 2 lines 14-19) wherein the lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; and M is at least one element selected from the group consisting of Mg, Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, Zr and Sn (col. 2 lines 41-60), the lithium-containing complex oxide comprising secondary particles formed of flocculated primary particles, wherein the primary particles have a mean particle diameter of 0.3 to 3 μm (col. 12 line 31) and the secondary particles have a mean particle diameter of 5 to 20 μm (col. 12 line 32).

Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 5:5:2 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y+\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$;

Art Unit: 1745

Ni_{0.5}Mn_{0.49}Co_{0.2}).

As to claim 36, Miyasaka discloses wherein the general formula, a ratio of Ni, Mn and M is in a vicinity of 1:1:1 (lithium-containing complex oxide represented by general formula $\text{Li}_{1+x+\alpha}\text{Ni}_{(1-x-y-\delta)/2}\text{Mn}_{(1-x-y-\delta)/2}\text{M}_y\text{O}_2$ (where $0 \leq x \leq 0.15$, $-0.05 \leq x + \alpha \leq 0.2$, $0 \leq y \leq 0.4$; $-0.1 \leq \delta \leq 0.1$; Ni_{0.5}Mn_{0.49}Co_{0.5}).

As to claim 45, Miyasaka discloses wherein the positive electrode mixture has a density of at least 2.9g/cm³ (col. 5 lines 60-61).

Response to Arguments

7. Applicant's arguments filed 6/26/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that Miyasaka does not anticipate claim 1, because the closest operative embodiment of Miyasaka is compound C-3 as described in column 12 line 52 and is out side the genus of lithium metal oxide, specifically has a δ value of 0.7, Miyasaka discloses the lithium-containing complex oxide within the limitations claimed by the applicant in the abstract. Miyasaka discloses examples of the positive active material through out the prior art, however are not limited to the examples provided but are limited to the limitations described in the abstract or col. 2 of the prior art.

In response to applicant's argument that Miyasaka fails to limit the quantity ratio of Ni to Mn to the vicinity of 1:1, Miyasaka teaches Ni_(1-y) y=0.5, Ni_{0.5}; Mn_(z), z=0.49 (see abstract).

In response to applicant's argument that Miyasaka fails to disclose that the Mn has an average valence of 3.3 to 4, since Miyasaka teaches the lithium containing complex oxide desired by the applicant, it is inherent that Miyasaka discloses wherein Mn has an average valence of 3.3 to 4.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Pynenburg et al. teaches a lithium-containing complex oxide B is represented by general formula $\text{Li}_{1+a+b}\text{R}_{1-a}\text{O}_2$ (where $0 \leq a \leq 0.05$ and $-0.05 \leq a+b \leq 0.05$, and R is at least one element selected from the group consisting of Mg, Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, Zr and Sn (col. 3 line 15) for the purpose of providing a mixture of metal oxides that is a smooth voltage profile during discharge, substantially without inflections and discontinuities (col. 3 lines 16-19). As to wherein the lithium-containing complex oxide B is contained in a ratio of 10% to 40% by weight with respect to a whole of the lithium-containing complex oxide A and the lithium-containing complex oxide B, Pynenburg et al. teaches that lithium containing complex A and B mixture is in the weight ratio from 1:10 to 10:1 (col. 7 line 59).

Art Unit: 1745

Therefore, it would have been obvious to one having ordinary skill in the art at the time applicant's invention was made to provide, Miyasaka with a lithium-containing complex oxide B is represented by general formula $\text{Li}_{1+a+b}\text{R}_{1-a}\text{O}_2$ (where $0 \leq a \leq 0.05$ and $0.05 \leq a+b \leq 0.05$, and R is at least one element selected from the group consisting of Mg, Ti, Cr, Fe, Co, Cu, Zn, Al, Ge, Zr and Sn, wherein the lithium-containing complex oxide B is contained in a ratio of 10% to 40% by weight with respect to a whole of the lithium-containing complex oxide A and the lithium-containing complex oxide B in order to provide mixture of metal oxides that is a smooth voltage profile during discharge, substantially without inflections and discontinuities (col. 3 lines 16-19).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1745

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane Rhee whose telephone number is 571-272-1499. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jane Rhee
August 23, 2006



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER